Chapter 3 Displaying/Drawing The GROUND Model

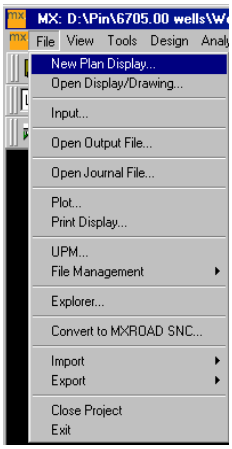
Once the Survey model file has been copied to your local project directory, or you have copied and run the Survey INPUT files into an empty model file, you are ready to view the existing ground information. In this chapter we will:

- Create a new plan display
- Assign Style and Feature sets to models
- Display the GROUND model
- Create a Plan Page Layout
- Generate scaled plan drawings for plotting.

Create A New Plan Display

As described in Chapter 1, there are two types of drawing files that MX uses: **Displays (*.DPW), and Drawings (*.DPF)**. The best way to think of these drawings, and when to use them is that all design-related activities must be done in a display. Drawings are only created for plotting, or in the case of profiles and cross sections, for transfer into MicroStation.

Once the survey information has been run into MX, we now need to display this information on the screen. To do this, we need to create a New Plan Display:



1. Select ***File, New Plan Display*** from the menu bar

2. A dialog box will appear asking for the name of the new plan display. Enter the new name (let's use "**planview.dpw**") and click ***OK***. You're now working in your new display. You should verify this by reading the title bar at the top of the MX window. It shows the path of your current display or drawing.

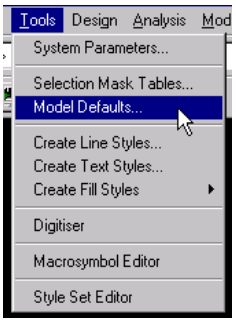
Assign Style and Feature Sets to a model

Each model contained in the model file should be assigned a default style and feature set. There are two ways to do this, and both methods will be described here. If you don't assign a specific default style and feature set to a model, then MX will assign the Mxroad style and feature set to the model automatically. A listing of MDOT's standard style and feature sets can be seen in a table on page 1-5 in Chapter 1 of this manual.

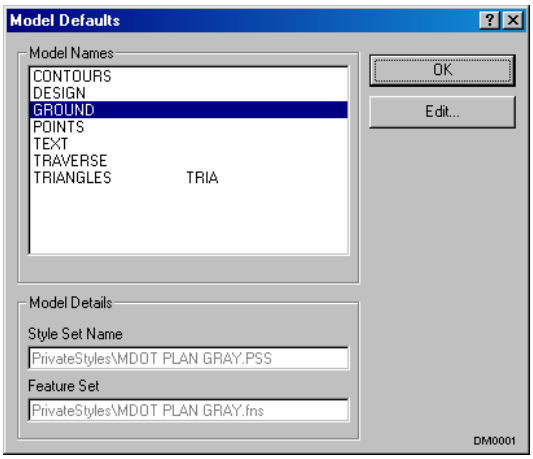
Method 1 – From the Menu Bar:

To set the default style and feature set at any time:

1. Select ***Tools => Model Defaults*** from the menu bar.



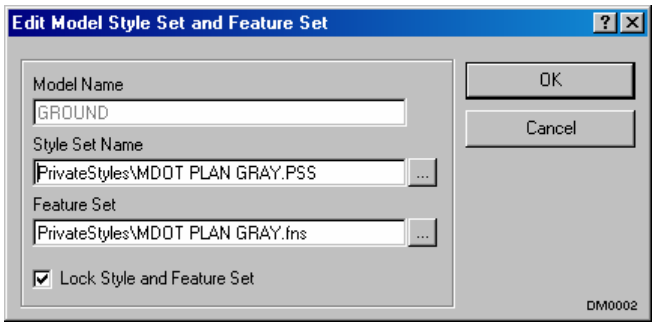
2. The following panel will appear:



As you click on each model name that's listed, you should see a style and feature set assigned at the bottom of the panel under the Model Defaults frame. If not, then you need to assign them. To assign a default style and feature set, select the model in the Model Names List, and then click on the ***Edit*** button.

3. The following panel will appear:

Find the correct Style and Feature sets for the GROUND model by clicking on the small buttons shown in the picture on the right. When done, click ***OK***

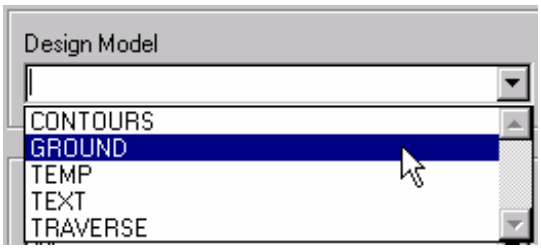


You should try to remember to visit this panel each time you create a new model. Many of the user support requests I receive about MX wizards not working, etc. are due to the incorrect style and feature sets being assigned.

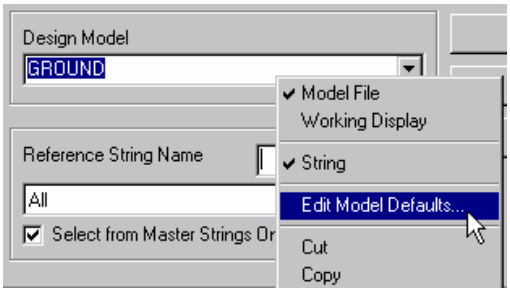
Method 2 – From the Model Control:

On some occasions, users forget to assign a model's style and feature sets before attempting to use the model in one of the MXRoad panels. A model control is simply a drop-down box that contains a list of all the models in the model file. It may also only list those models currently displayed in the DPW or DPF that's on the screen. A model control looks like this:

AND



If you would like to set the default feature and style sets for the current model listed in the model control:

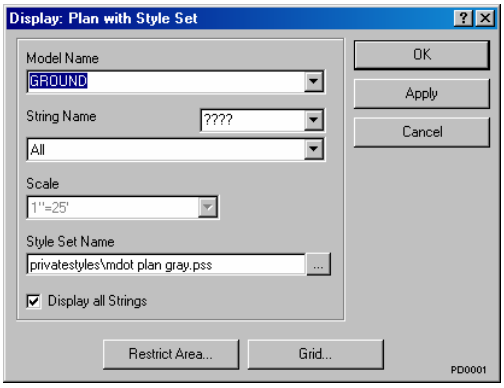


1. **<u>Right-click</u>** on the model name in the drop down box
2. Select ***Edit Model Defaults*** from the popup menu
3. Assign the style and feature sets as outlined in step 3 of Method 1 shown above.

Display The GROUND Model

To Display the Existing GROUND Model

1. Select ***Display => Plan with Style Set*** from the menu bar



2. Select the model to be displayed (GROUND), and set the scale and style set if you want to use a different one than is shown in the panel. When the information is correct, select either **OK** to draw the GROUND model and dismiss the panel, or **APPLY** to draw the ground model, and keep the panel open to specify another model. You can quit this panel by clicking **Cancel**.

NOTE: You can also have a grid displayed by clicking on the "Grid" button before continuing by clicking on OK. The "Restrict Area" button allows you to specify an area either by a boundary string, or rectangle to display your proposed DESIGN model, contours, or other models to be displayed after the existing GROUND.

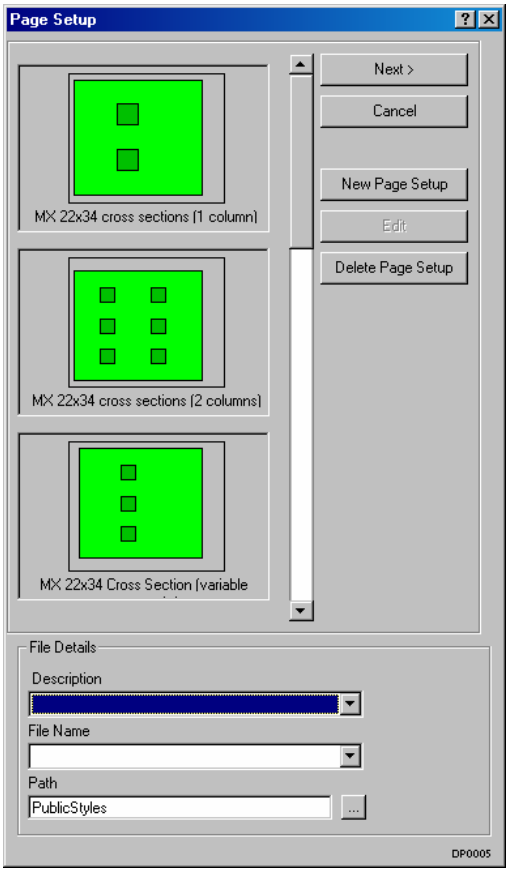
Creating A Plan Page Layout

To create plots of the model data, Mdot has a pre-defined set of drawing sheets. MX provides an interactive means to do this called Plan Page Layout. These layouts can be saved in the project directory, and a number of different layouts can be created with different sheet sizes, etc. A number of page setups have been created for MDOT work.

Page Setups	***Width***	***Height***
roll03	35.4 in / 90 cm	34 in / 86.36 cm
roll05	59.1 in / 150 cm	34 in / 86.36 cm
roll07	82.6 in / 210 cm	34 in / 86.36 cm
roll10	118.1 in / 300 cm	34 in / 86.36 cm
roll15	177.1 in / 450 cm	34 in / 86.36 cm
roll20	236.2 in / 600 cm	34 in / 86.36 cm
plansht	30.6 in / 77.8 cm	22.2 in / 56.3 cm

They are:

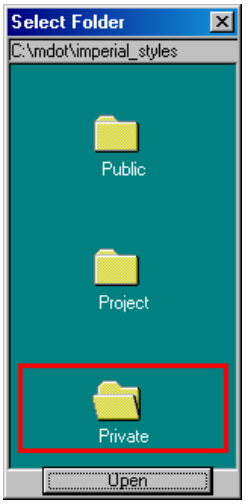
To begin creating your Plan Page Layout:

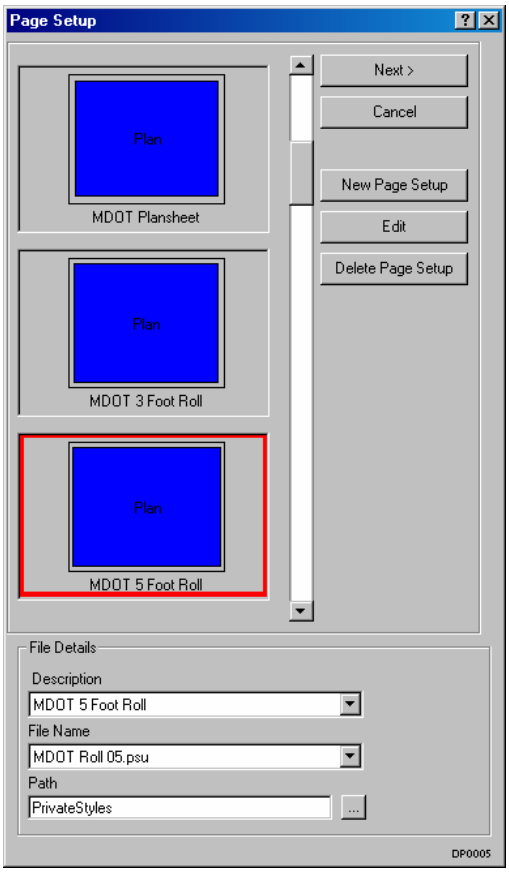


- Select ***Draw => Working Drawings => Create New Drawing*** from the menu bar.
- The first panel is a default panel. Browse to the correct locations for the sheets by selecting the [...] button located to the right of the "Path" dialogue box.
- Click on the Private folder . This will open up the correct path for your project.

Us customary location…
C:\mdot\imperial_styles

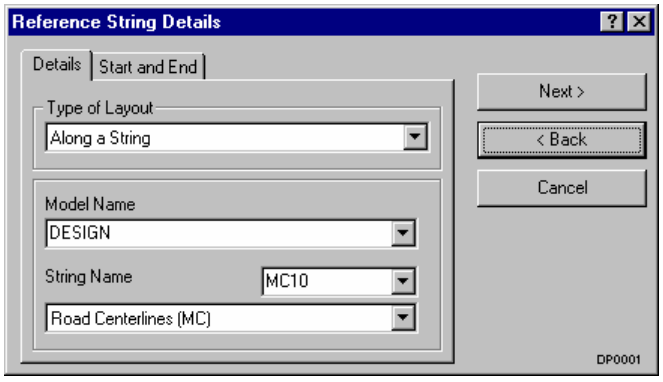
Metric location…
C:\mdot\mdot_styles





- On the Page Setup Panel, ***Select the page description*** from the File Details area at the bottom of the panel, or select one of the sheets shown graphically. New page setups can be created from this panel, or existing page setups can be edited, then saved as new setups.
- Example: Select MDOT PlanSheet as the description.
- As shown in the table on the previous page, this defines a sheet that is 30.6 in wide by 22.2 in high.
- Click ***Next*** to proceed.

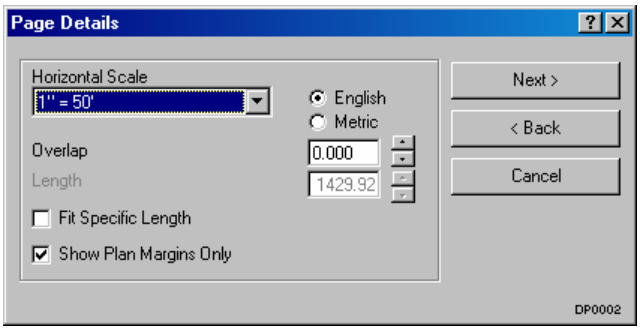
- On the Reference String Details Panel that appears, you have two layout types options. The "Along a String" choice will automatically align your selected sheet size along a specified Master String. The "Adjacent Pages" choice doesn't orient the sheets along a specific string, rather they are defined relative to each other. More details on how to use each layout mode is provided below:



Along A String

Select your master centerline alignment string (MC10 in this example), set any start and end limits you wish on the Start and End tab, then click ***Next*** to continue.

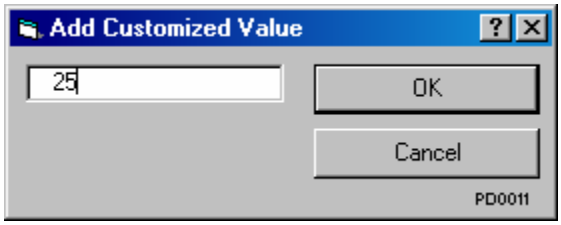
MX will align the first sheet, then present the Page Details panel which allows you to set the Horizontal Scale, Sheet Overlap, and Length (in model units) that will fit on each sheet.



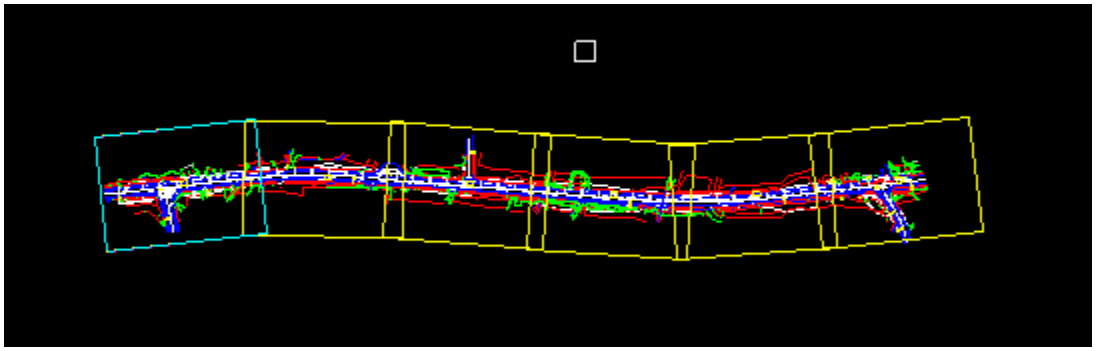
The Page Details panel has a default of 50 scale. Use the "*Horizontal Scale*" drop down box to select the choice of "*Custom*".

Type **25** in the information box to produce drawings at 25 scale.

Click **OK**.

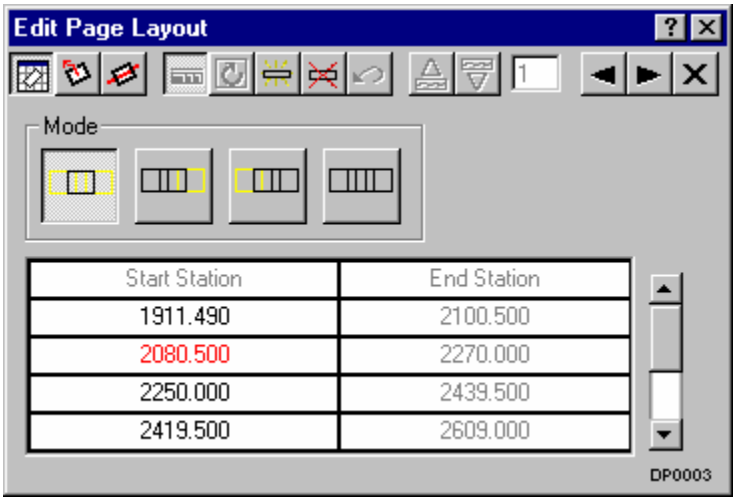


Once you've set these values, click ***Next***. This wizard will automatically orient the sheets along the alignment.

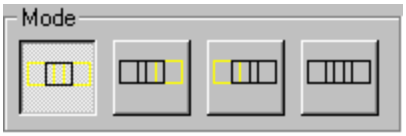


Pages Oriented Along A String

Along with a preview of the sheet in the graphical window as illustrated above, the Edit Page Layout panel will appear:

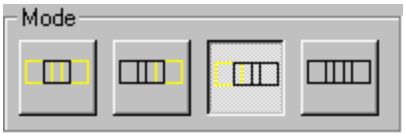


Each row in the table represents the start and end stationing for a given sheet. If you click on the start station in a particular row in the table, the graphical sheet layout boundary will be highlighted in the display area in orange. Four modes are available for editing. From left to right as illustrated in the panel shown above are:

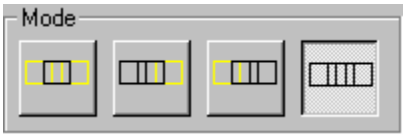


Selected Single Page - in this mode, only the page highlighted in the table will be altered.

Selected Page and All Previous - in this mode, when you change a station value for a selected page, all previous pages' station limits are altered relative to the new values for the selected page.



Selected Page and All Next - similar to the selected page and all previous, changes to a selected page are reflected in the limits of all subsequent pages.

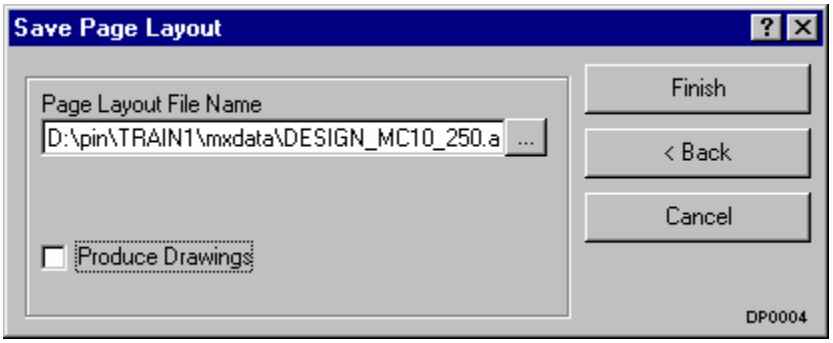


All Pages - All sheets in the set are manipulated together as a set.

Once you've selected the mode of operation, you can perform a variety of operations on them using the tools at the top of the Edit page layout panel. More detailed information on how to use these tools will be provided in the next section.

Click the right Arrow  to continue.

- You'll be asked to save this information as a Page Layout File (*.apl).

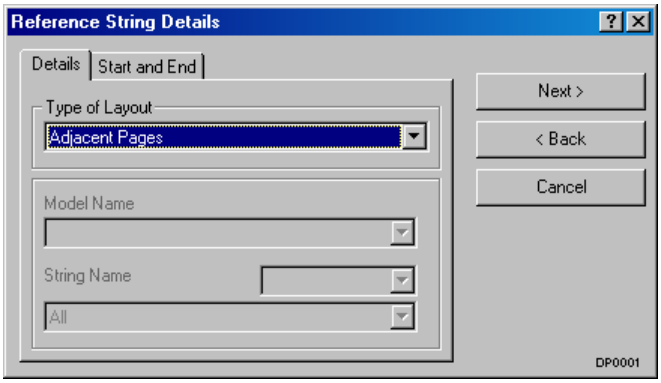


- Browse to your project directory and provide a meaningful filename for the layout file, or accept the default filename provided by the wizard. If you intend to draw these sheets using the MDOT Draw Plan Pages wizard, make sure that "Produce Drawings" is unchecked.

- Click ***Finish*** to create the Page Layout File.

Adjacent Pages

Proceed through the first few steps as first described in the above procedure, until you come to the panel where you will either select " Along a String" or " Adjacent Pages".

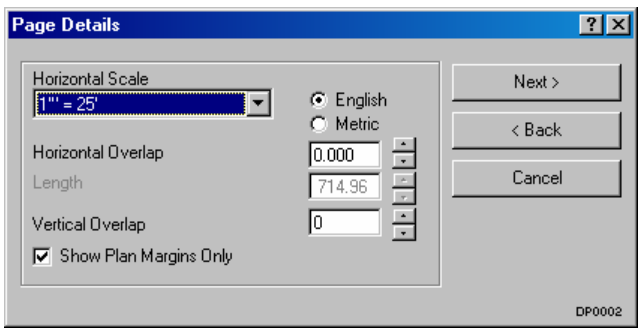


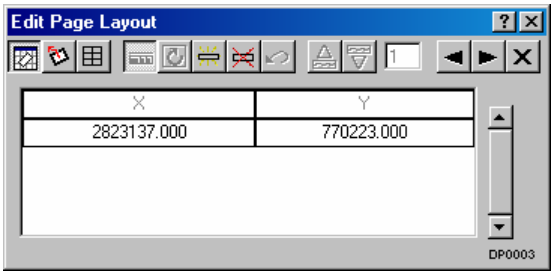
This layout will allow plotting of the project without the generation of an alignment.

Select Adjacent Pages and click **Next**.

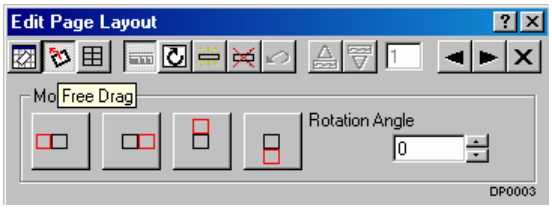
Set the correct scale, by choosing "*Custom*" from the pull-down menu and typing **25** at the resulting pop-up panel. Click **Ok**, to produce the drawings at 25 scale. You will be returned back to this panel with the correct settings displayed.

Click **Next**.



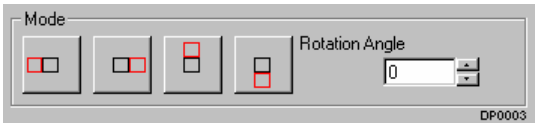


This panel allows you to position your sheet on your topography as you choose. By passing the cursor over each icon on the menu bar, you can view your choice of sheet manipulation.



Free Drag allows you to select the sheet intergraphically(it will turn the color of orange), and with a left mouse click and hold, the sheet border can be dragged across the screen to the desired location.

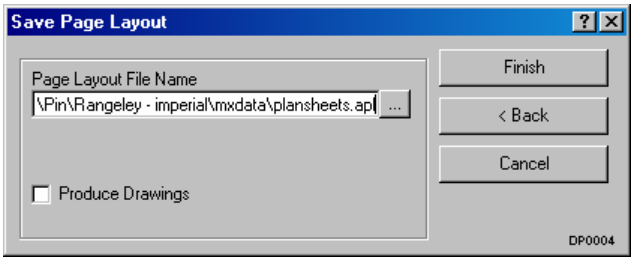
Rotate To adjust the sheet to a desired angle, click the Rotate button and move the cursor onto the screen. The sheet will rotate automatically. When the rotation has been achieved, a left click on the background will set it.



These buttons determined in which direction the new sheet will be created and then creates it.

Create another sheet and Delete a sheet.

If you have created all of the sheets necessary, proceed to the next panel, with the forward arrow.



Uncheck the "Produce drawings", verify that the drawing file is being saved in the correct folder and has a descriptive name.

Select **Finish**

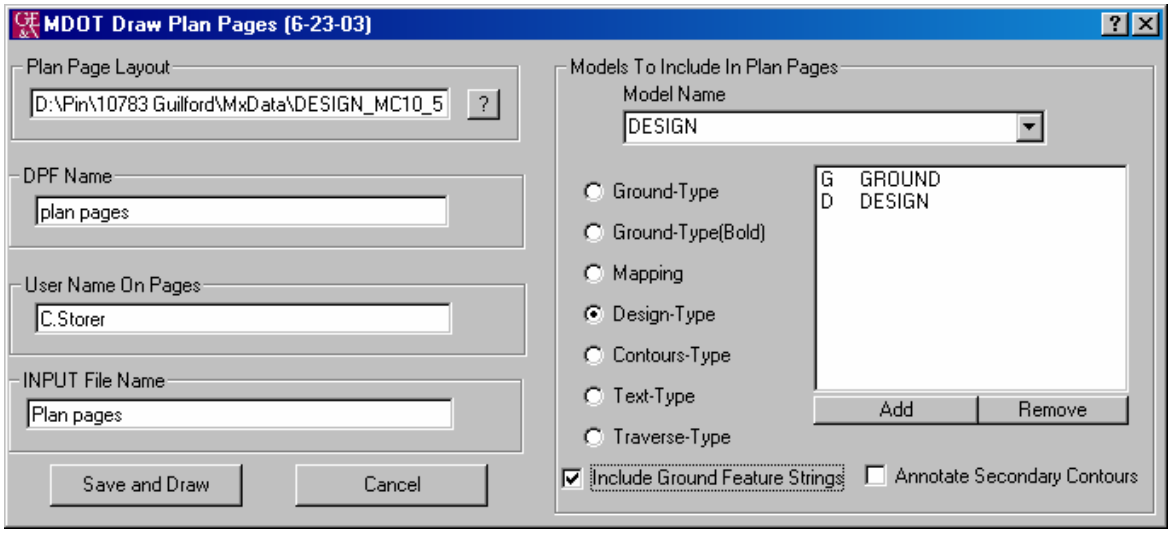
MDOT Draw Plan Pages

Now that we've created a saved set of page definitions in Plan Page Layout, we can create a set of plan sheets on which the existing ground is drawn. MX comes with a built-in function to do this job, but it relies on using the Style Sets, which are assigned to each model and used to DISPLAY them to determine how they are drawn on the pages. In order to plot these sheets on MDOT's plotters, a different "color scheme" called MDOT Plotting Colors should be used when creating these sheets. To do this, a replacement module called "MDOT Draw Plan Pages" has been created.

Features:

- Allows you to select exactly which models to draw just as the DRAW command macros do.
- The last-used values are saved when you exit the program, so that you can easily change a setting and redraw the pages without having to enter in all of the data again.
- An INPUT file is created to draw these pages.
- It creates a multi-sheet DPF named as the user desires.

1. From the Add-Ins Menu, select ***MDOT Draw Plan Pages***. The following panel will be displayed:



2. Select the Plan Page Layout file, which you created earlier by clicking the button with the question mark on it. This provides an "Open File" dialog box allowing you to choose from any number of saved plan layouts.

3. Type in the NAME of the DPF to be produced. (NOTE: Don't include the "*.DPF" file extension.)

4. Type in the User Name to be annotated on each page to help with identifying the owner of plots as they are sorted.

5. Enter the name of the INPUT file, which will be created to draw these pages. (NOTE: Don't include the "*.INP" file extension.)

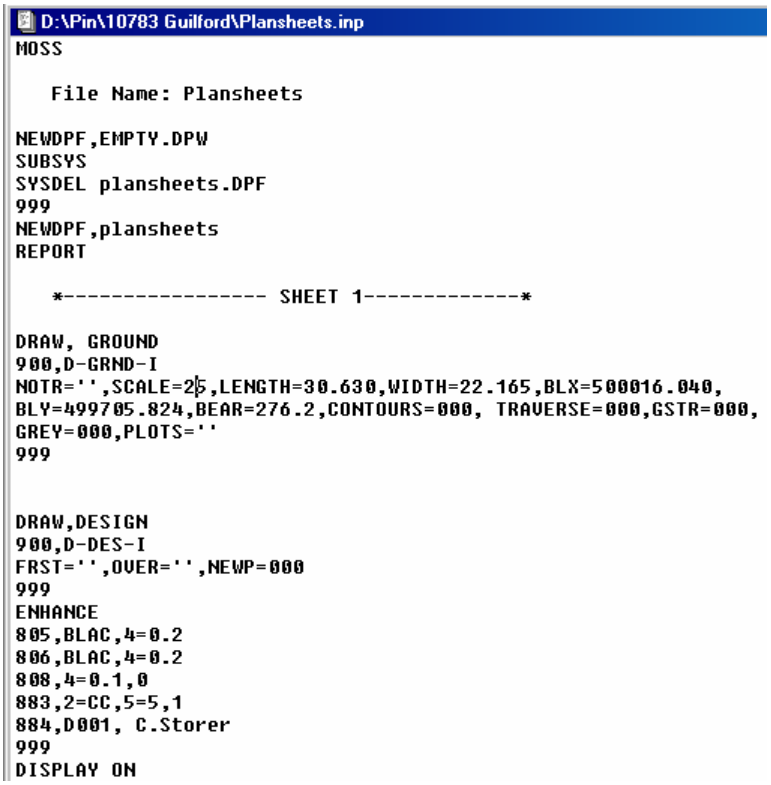
6. Select which models will be drawn in the plan pages by building a list on the right side of the panel. Find the model you wish to draw in the "Model Name" drop-down box, select the appropriate "Model Type" button then Click the ***Add*** button to place the model in the model list

7. If you would like to include the Survey Ground Feature strings in your drawings, use the checkbox on the right side of the panel. This will draw the "G" strings in each model that is given either the Ground-Type or Ground-Type(Bold) designator.

8. Click on the ***Save And Draw*** button to draw the pages and save the current settings. The application will then execute the INPUT file it created, and draw plan pages as depicted below. Click on the ***Cancel*** button to quit the program without saving or to exit the program.

The INPUT File Created By MDOT Draw Plan Pages

The exact look of the input file created by MDOT Draw Plan Pages will vary depending on what settings you filled out in the panel for that module, but most likely it will look similar to this:



D:\Pin\10783 Guilford\Plansheets.inp

```
MOSS

   File Name: Plansheets

NEWDPF,EMPTY.DPW
SUBSYS
SYSDEL plansheets.DPF
999
NEWDPF,plansheets
REPORT

   *----------------- SHEET 1-------------*

DRAW, GROUND
900,D-GRND-I
NOTR='',SCALE=25,LENGTH=30.630,WIDTH=22.165,BLX=500016.040,
BLY=499705.824,BEAR=276.2,CONTOURS=000, TRAVERSE=000,GSTR=000,
GREY=000,PLOTS=''
999


DRAW,DESIGN
900,D-DES-I
FRST='',OVER='',NEWP=000
999
ENHANCE
805,BLAC,4=0.2
806,BLAC,4=0.2
808,4=0.1,0
883,2=CC,5=5,1
884,D001, C.Storer
999
DISPLAY ON
```

Each Line in an INPUT file can contain a command line, a blank line, or a comment line. Command Lines start in column 1 of the line. Comment Lines start in column 4 of the line, with the first 3 columns being blank. Quite often during MX discussions with other designers, you'll hear the expression, "comment out" a particular line. This simply means to add 3 spaces to move the first letter of the text in the line to Column number 4. Likewise, to "comment in" a line, you would remove the 3 spaces. Only command lines are recognized and acted upon by the MX software when you run the INPUT file. Example:

```
800,4=1,56.3,77.8     *this line will be executed by MX
   800,4=1,56.3,77.8   *this line has been "commented-out".
```

The first Command Line in an INPUT File must always be "MOSS". This lets the software know that what follows is an INPUT file.

A few lines below this are the lines:

```
SUBSYS
SYSDEL PLANSHEETS.DPF
999
```

This code search the project directory for the MX drawing called "PLANSHEETS.DPF", and deletes it if it exists. If not, it continues to the next line. SUBSYS is an MX Major Option. The "999" two lines below this is used to specify the end of lines referring to Major Option SUBSYS. Each section of an input file begins with a Major Option, and ends with "999". Between these two lines will be a variety of Minor Option Command lines that are used under the specified Major Option.

A bit lower in the file are the lines:

```
NEWDPF,PLANSHEETS
```

This command line creates a "new DPF" called "PLANSHEETS.DPF", on which all subsequent commands will perform. Since we deleted any old drawing by that name in the lines above, we'll start with a new, empty drawing file.

The next line is:

REPORT (another MX Major Option)

followed by Major Option DRAW.

```
DRAW, GROUND
900,D-GRND-I
NOTR='',SCALE=25,LENGTH=30.630,WIDTH=22.165,BLX=500016.040,
BLY=499705.824,BEAR=276.2,CONTOURS=000,TRAVERSE=000,GSTR=000,
GREY=000,PLOTS=''
999
```

The first line, DRAW, GROUND tells the software the name of the Model, GROUND, which shall be used in the DRAW Major Option.

The next line, "900,D-GRND-I" is a General Minor Option called "Invoke a macro option". D-GRND-I is the name of the MACRO being executed.

The next line contains a number of parameters, which are used by the Macro, and allows you to customize how the macro behaves for your particular INPUT file. Parameters set equal to "000" are "false", or "not activated". Parameters set equal to '' are "true", or "activated". Here are the parameters most often set:

BLX	- X Coordinate of Bottom-left-hand corner of sheet
BLY	- Y Coordinate of Bottom-left-hand corner of sheet
BEAR	- Bearing of left-hand side of sheet
SCALE	- Us Customary scale of drawing (i.e. 25, 50, etc.)
	- Metric scale of drawing (i.e. 250, 300,...,500, etc.)
MAR	- Margin width
CONTOURS	- Set to 000….no longer used
TRAVERSE	- Set to 000….no longer used
LENGTH	- Length of sheet
WIDTH	- Width of sheet
PLOTS	- Toggle to draw ground in plotting colors (i.e. "faded"). (*Note If PLOTS=000, ground is drawn as Bold-Type)

NOTR - No Truncate...meaning the sheet expand to fit all data drawn
PAGE - Paging Invoked...meaning this file is creating a multi-paged drawing.

The lines between the ENHANCE and its respective "999" command adds your name to the border of each of the plan sheets created by this INPUT file. This is necessary so that we, and others, can identify who the owner of the paper plots are when they are sent up to the plotting room.

Major option ENHANCE is used to add annotation such as symbols and text to an MX Drawing. It's only allowed to be used on drawings (DPF's), and won't work on displays (DPW's) since they're not drawings. The following two lines set the line color and text color:

```
805,BLAC,4=0.2          -Set the line color
806,BLAC,4=0.2          -Set the text color
```

The "4=0.2" in each line sets the pen width to 0.2mm.

The final two commands in the file are

`DISPLAY ON` - this updates the drawing on the screen based on the commands given

And

`FINISH` - this is always the last command in an input file, and tells the software it has reached the last command.